DOCUMENT RESUME

ED 375 739 HE 027 834

AUTHOR Onasch, Christine
TITLE Undergraduate Grade Point Average and Graduate Record Exam Scores as Predictors of Length of Enrollment in Completing a Master of Science Degree.
PUB DATE Jun 94
NOTE 9p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Age Differences; *Educational Attainment; *Grade Point Average; *Graduate Students; Graduate Study; Higher Education; *Masters Degrees; *Predictor Variables; Student Financial Aid; Undergraduate Study
IDENTIFIERS *Graduate Record Examinations; *Time to Degree

ABSTRACT

This study sought to determine the usefulness of undergraduate grade point average (GPA) and Graduate Record Exam (GRE) scores as predictors of the time it takes to complete a Master of Science degree. It examined six variables taken from the files of 100 students who had completed Master of Science degrees in geology at Bowling Green University (Ohio) within the past 12 years. Variables were: (1) undergraduate GPA; (2) geology course GPA; (3) GRE verbal scores; (4) GRE quantitative scores; (5) applicant age; and (6) the number of years required to complete the degree. Although the results do not suggest any strong relation between undergraduate GPA, GRE scores, and degree completion time, the study did find that students with higher undergraduate GPAs took less time to graduate than students with lower undergraduate GPAs. It also found that higher GRE scores predicted a longer time to graduation, and that age and undergraduate GPA were inversely related. The study recommends that graduate committees award financial aid based primarily on the applicants undergraduate GPA, since GRE scores do not necessarily predict the ability of the student to complete their course of study in the prescribed time. (MDM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED375739

Undergraduate Grade Point Average and Graduate Record Exam Scores as Predictors of Length of Enrollment In Completing a Master of Science Degree

Christine Onasch
Master of Education candidate
Bowling Green State University
Department of Special Education

Running head: Predicting Length of Enrollment in Master's Program

HE 027 434

"PERMISSION TO REPRODUCE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

Christine Onasch

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

Abstract

Measures of academic achievement of one hundred graduate alumni were analyzed for relationships between the length of the course of study and academic measures. The measures analyzed were undergraduate grade point average, and Graduate Record Exam scores. For this data set there appears to be a negative relationship between undergraduate grade point average and length of time to complete degree. This relationship may aid the graduate committee in awarding financial assistance to those students who are most likely to finish their degree in an expedient manner.

Undergraduate Grade Point Average and Graduate Record Exam Scores as Predictors of Length of Enrollment In Completing a Master of Science Degree

Each year there are more applicants for admission into the Master of Science program in the geology department at Bowling Green State University than can be accepted and a select number from the successful candidates are awarded financial assistance. Because resources are limited, the graduate committee would like to be able to insure that the financial assistance is awarded to those prospective students who are most likely to successfully complete their degree in the shortest time interval. The purpose of this study is to analyze some of the quantitative academic performance data contained in the graduate applications of those students who have successfully completed their Master of Science degree to see if any relationship exists between these data and the time it took the student to complete their degree. This information could aid the committee in their decision making.

Administrators of graduate programs have a very lengthy and difficult task each year in selecting students from numerous applicants. The acceptance or rejection of an application can have far reaching effects for both the prospective students as well as the graduate school. A graduate admissions officer's nightmare would be to have turned down an applicant who later won a Nobel prize. In an effort to standardize and quantify the selection task many graduate applications require the reporting of undergraduate grade point average as well as scores on the Graduate Record exams. Questioning the validity of these measures in predicting the success of a student in graduate school has been the theme of many research efforts, among them are Wilson (1988), Broadus and Elmore (1983) and Malaney (1986). There has been no consensus on a solution to the problem that can be applied across all fields of graduate study.

One of the problems in predicting the success of a graduate student is defining what is meant by success. Goldberg and Alliger (1992) addressed this problem and suggested that success could be defined as completing the course of study and graduating in the prescribed time limit. The amount of time a graduate student takes to graduate is likely to vary by discipline and by institution. Once the parameters of success have been determined; the past performance data can be analyzed to ascertain their value in predicting this defined success. For this study success was defined as completing a Master of Science degree in geology, regardless of the time it may have taken. However those students, who completed

their program in two years or less would be considered more successful by the graduate committee. The relative value of quantitative measures of a student's ability, such as the Graduate Record Exam (GRE) and undergraduate grade point average (UGPA), in predicting the success of a graduate candidate has undergone much research. Broadus and Elmore (1983) found that the GRE scores were better at predicting the success of students in a graduate library school program than UGPA. While Goldberg and Alliger (1992) determined that the GRE scores were able to predict psychology graduate student's grades for the first year, but could not predict whether or not they finished their degree. The awarding of financial support for graduate students at a large midwestern university was found to be highly correlated with their UGPA according to a study done by Malaney (1986) and not their GRE scores. The data used in the current study included the scores from the Graduate Record Exams both verbal(GREV) and quantitative (GREQ), undergraduate grade point average (UGPA), and geology grade point average during their undergraduate years (GGPA).

How useful is this data in predicting the success of a student in the graduate program? Logic and the research literature suggest that the GRE scores and the UGPA could be used to predict the success, as defined for this study, of a prospective graduate student. It is expected that the higher the GRE scores will be related to faster completion of the graduate program. The UGPAs of the students should also show the same relationship, although not to the same degree, as undergraduate grades can be subject to grade inflation, but the GRE scores are standardized across all students who take the exam.

Method

Subjects

The one hundred subjects in this study have completed their Master of Science degree in Geology at Bowling Green State University within the past twelve years and were accessible to the researcher. They all had a complete application in their file with their GRE scores as well as their UGPA and GGPA. Some of the files contained GRE analytical scores, but some did not as they had taken the exam prior to the institution of this part of the exam. For this reason the GRE analytical scores were not used in this study.

Measures

There were six measures taken from the files of successful graduate students for this study. They are undergraduate grade point average (UGPA), geology grade point average (GGPA), Graduate Record Exam-Verbal score (GREV),

Graduate Record Exam-Quantitative score (GREQ), age of the applicant (Age), and number of years take to graduate (# Yr). Broadus and Elmore (1983) found that the combined score of GREV and GREQ was a better predictor of success than either one of the scores alone. For the current study the GREV and GREQ scores were added and treated as a seventh measure (V+Q). The mean and standard deviation for all measures were calculated and are summarized in Table 1.

Table 1.

	UGPA	GGPA	GREV	GREQ	V+Q	Age	# Yr
Mean	3.07	3.19	499	538	1037	23.3	3.4
Std. D.	0.44	0.48	80	92	142	2.6	2.1

The UGPA ranged in value from a low of 2.23 to a high of 3.93. The GGPA values ranged from 2.10 to 4.0. The GREV scores ranged from 340 to 680. The GREQ scores ranged from 320 to 730. The quantitative scores are higher than the verbal scores which is in agreement with the findings of Strickler and Rock (1987) who reported that graduate students in the sciences generally had higher scores in the quantitative than in the verbal. The summation score (V+Q), verbal plus quantitative ranges from 830 to 1340. The age at the time of application (Age) ranges from 21 to 30. The number of years to graduation (#Yr), the criterion variable in this study ranges from 1 to 11.

Procedures

The variable that the graduate committee wished to predict is the number of years to graduation, this then is the criterion variable. A correlation coefficient was calculated for each of the variables with the criterion variable as well as with the other predictor variables.

Results

The results of the correlation calculations are contained in Table 2.

Table 2.

	UGPA	GGPA	GREV	GREQ	V+Q	Age	#Yr
UGPA	1.0						
GGPA	0.76	1.0					
GREV	0.33	0.27	1.0				
GREQ	0.09	0.06	0.37	1.0			
V+Q	0.24	0.18	0.79	0.87	1.0		
Age	-0.19	-0.18	0.04	-0.14	-0.08	1.0	
#Yr	-0.21	-0.12	0.18	0.19	0.22	0.08	1.0

The value of r at the 0.01 level of significance is 0.254, and at the 0.05 level it is 0.195. None of the measures in the graduate application files that were selected for this study are significantly related to the number of years to graduation (#Yr) at the 0.01 level of significance. However, at the 0.05 level, the number of years to graduation (#Yr) is negatively correlated with the UGPA, meaning that the higher the UGPA the faster the student completes the course of study. In contrast the V+Q score is positively correlated, indicating that the higher the summation score on the GRE exam, the longer the student will take to graduate.

There are other values of r in Table 2 that are significant at the 0.01 level. Some of these relationships are not surprising because the two measurements are related, such as UGPA and GGPA; the GGPA is used in calculating the UGPA, thus an r of 0.76 is not surprising. The GREV and GREQ are highly correlated with V+Q, because V+Q is the sum of GREQ and GREV. It is interesting to note the significant correlations that occur that do not have a mathematical source, such as the correlation between UGPA and GREV. This would seem to indicate that students with high UGPAs also have higher GRE scores, a finding that agrees with the research done by Malaney (1986). The variable UGPA is also highly correlated to the V+Q, which is logical given the relationship of GREV and V+Q. It is puzzling to see that according to this study there is no significant correctional relationship between GREQ and UGPA. There are two correctional relationships that are right on the edge of being statistically significant at the 0.05 level, these are the inverse relationship between age and UGPA, the older the student the lower the UGPA, and the positive r between #Yr and Q+V which could be predicted given the relationship between Q+V and GREQ.

Discussion

The data analyzed for this study do not present a clear cut relationship that can aid the graduate committee in awarding financial assistance. The relationship between the criterion and predictor variables was not statistically significant at the 0.01 level. There is, however, hope in that two of the predictor variables, UGPA and V+G are significantly related at the 0.05 level to the number of years to graduation. The UGPA is negatively correlated, indicating that a student with a high UGPA will be more likely to finish their course of study and graduate in a shorter time than a student with a low UGPA. A surprising result of this study is that the higher GRE scores, specifically the V+Q summation score, predict a longer time to graduation. This result merits further study, for if the relationship is

real, it behooves a prospective student to not do well on the GRE, but concentrate instead on their UGPA. Of course by the time a student is ready to take the GRE their UGPA has, for the most part been decided. Thus perhaps the high UGPA indicates a history of academic achievement, and the GRE is but a one-time measure of the student, which does not realistically indicate their future success in graduate school. Goldberg and Alliger (1992) discuss in some length the problems of relying too heavily on GRE scores to predict success in graduate school. Wilson's 1988 study found that the scores of an individual taking the GRE are stable over time. Student who take the test within a five year period score the same as they did on the previous exam. The GRE score is stable, but it is not clear what it measures.

There were other interesting relationships indicated by the correctional study of these data. The age of the student is inversely related to the UGPA, does this mean that older students have less academic aptitude? Perhaps this is an indication of the vaunted "grade inflation" that is discussed on campuses. The older students could have been subjected to a tougher grading scale than the more recent graduates, but the data do not indicate when the undergraduate degree was obtained. The older students could be older because they delayed their metrication into college until a later date. The reasons for and nature of this delay, if there is one, and its effects on academic performance, if there are any, is another possible avenue of research. It was theorized by one of the members of the graduate committee that the older students might be faster in completing their degree, as they are more anxious to get on with their careers and do not want to dally in graduate school to enjoy an already extended adolescence. There was no such relationship found in this data set to support this theory. There was no statistically significant relationship between the age of the applicant and the speed with which they completed their program.

The author's recommendation to the graduate committee, based on the data in this study, is to award financial aid based primarily on the applicants UGPA. The GRE scores do not necessarily predict the ability of the student to complete their course of study in the prescribed time according to the past data contained in the files concerning the academic performances of the successful graduate students in their department.

References

Broadus, R.N.,& Elmore, K.E., 1983. The Comparative Validities of Undergraduate Grade Point Averages and of Part Scores on the Graduate Record Examinations in the Predictions of Two Criterion Measures in a Graduate Library School Program. Educational and Psychological Measures.,43,543-546.

Goldberg, E.L., & Alliger, G.M., 1992. Assessing the Validity of the GRE for Students in Psychology: A Validity Generalization Approach. Educational and Psychological Measures,52,1019-1027.

Malaney, G.D., 1986. Who Receives Financial Support to Pursue Graduate Study. Research in Higher Education, 26,85-97.

Strickler, L.J.& Rock, D.A., 1987. Factor Structure of the GRE General Test in Young and Middle Adulthood. Developmental Psychology, 23, 526-536.

Wilson, K.E., 1988. A Study of the LongTerm Stability of GRE General Test Scores. Research in Higher Education, 29,3-40.